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December 22, 1951

SCIENCE NEWS LETTER

In This Issue—SCIENCE REVIEW OF THE YEAR

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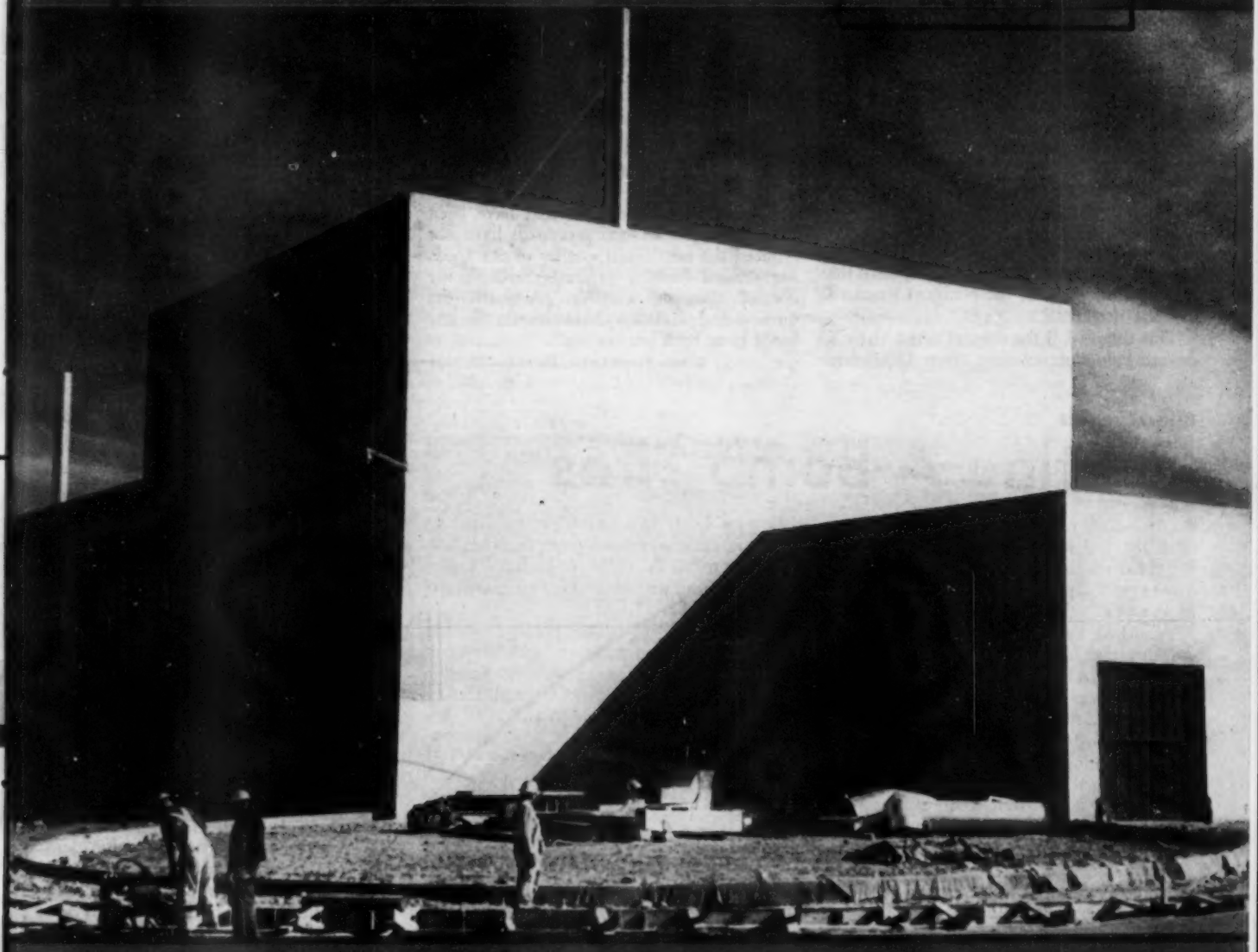
THE WEEKLY SUMMARY OF CURRENT SCIENCE



Atomic Fuel Breeder

See Page 389

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VOL. 60 NO. 25 PAGES 385-400

MEDICINE

DDT Not Sickness Cause

No need to worry about getting dangerous disease from insecticide residue on food, National Research Council committee reports.

➤ YOU DO NOT need to worry about getting some dangerous or strange sickness from DDT, parathion or other insecticide that might be in your food because the farmer used it to protect his crops.

And you can rest easy about chemicals used to retard mold on bread, improve the quality of evaporated milk and keep butter a summer-yellow color all year round.

The Food Protection Committee of the National Research Council has just issued a statement to this effect. The committee has worked for a year on this subject of "chemical additives" and their effect on health.

"There is no evidence that consumption of foods resulting from the use of new chemicals in crop production or in the processing of foods has created mysterious diseases and epidemics or endangered the health of the people," the National Research Council declares.

This should kill the rumors about virus X disease epidemics coming from DDT and other, similar rumors, all of which presumably started because people drew conclusions without sufficient information. Such rumors have been widespread in recent years.

Parathion, for example, is an extremely poisonous substance. But it is extremely volatile in the form used to control coddling moth on fruit trees. It therefore blows away very quickly. If the farmer follows directions not to use it later than one month before harvest, none of the poisonous material will be left on the fruit that reaches the consumer.

As to the idea that we are eating poison with our bread because chemicals to keep it fresh are added, the Council says this:

"Contrary to some ideas that have been circulated, reliable food processors have not reduced the nutritional quality of our foods nor created inferior products through the use of chemical additives. Actually, the quality and sanitary characteristics of our foods have been improving."

Science News Letter, December 22, 1951

GENERAL SCIENCE

Fighting A-Bomb Fires

➤ A NEW manual for the training of auxiliary and regular firemen in the fighting of fires set by A-bombs and incendiaries will appear shortly after the first of the year.

Published by the Federal Civil Defense Administration, it will take into account the danger from the powerful "fire storms" which were experienced by Hiroshima and Hamburg during World War II.

Already fire wardens from cities throughout the nation are being trained in fire fighting at a special school at Oklahoma Agricultural and Mechanical College. Another such school will open near Philadelphia in January.

Meantime, Federal civil defense officials are preparing suggestions to cities on how to make themselves less vulnerable to fire caused by A-bombs. Under the law these, of course, will be only suggestions.

They will include such matters as the preparing of fire brakes and erection of fire walls, the use of fire-resistant paint, the proper spacing of new construction. Information on the kinds of construction which will best resist fire will be included.

This is not one minute too soon, according to Horatio Bond, chief engineer of the National Fire Protection Association. In 1946, we knew most of what we need to know to make our cities more fire resistant. Military men, he said, could have begun advising municipalities on new construction at that time.

It takes congestion, he pointed out, to produce the fire storms which swept through Hiroshima and Hamburg. Sensible planning of new construction and tearing down of older buildings might allay this danger.

Science News Letter, December 22, 1951

MEDICINE

Vitamins Seen as Future Heart Disease Prescription

➤ DOCTORS IN the future may be prescribing vitamins for treatment of heart disease, it appears from research reported by Dr. Frederick J. Stare of Harvard School of Public Health at a meeting of the Institute of Life Insurance in New York.

Working with duck hearts, he finds that the ability of heart tissue to utilize foodstuffs efficiently is damaged by a great variety of vitamin deficiencies. Heretofore doctors have thought the chief vitamin lack that affected the heart was lack of thiamine, or vitamin B 1. This lack results in what is called beri-beri heart disease.

Now Dr. Stare finds that hearts cannot utilize foodstuffs efficiently when the diet is lacking in any of the following vitamins: niacin, folic acid, pantothenic acid, biotin and pyridoxine.

"The facts these researches yield," he said, "may eventually result in improved therapy (treatment) for certain types of heart disease."

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BIOCHEMISTRY

Synthesize New Vitamin Factor Called Biocytin

➤ A NEW vitamin factor, called biocytin, has now been made artificially.

It was first isolated in pure crystalline form in 1949 by cooperative research between scientists at Sharp and Dohme, Philadelphia, and Merck and Co., Rahway, N. J. These same scientists announce they have now synthesized the vitamin factor.

Biocytin occurs only in infinitesimal amounts and the scientists have no idea what its value may be. Its isolation and synthesis are considered "heroic" achievements because of the very small amounts the scientists had to work with.

Some 25 tons of yeast were processed to obtain less than a thirtieth of an ounce of biocytin. The new vitamin factor is related to biotin.

Scientists announcing the synthesis in the journal SCIENCE (Dec. 14) are: Drs. Lemuel D. Wright and Emlen L. Cresson and Mrs. Helen R. Skeggs of Sharp and Dohme, and Drs. Robert L. Peck, Donald E. Wolf, Thomas R. Wood, John Valiant and Karl Folkers of Merck and Co.

Science News Letter, December 22, 1951

MEDICINE

War Gas Ointment Treats Metal-Caused Inflammation

➤ CHRONIC SKIN inflammations due to contact with heavy metals such as chromium compounds might be helped by use of an ointment containing BAL, the lewisite war gas antidote.

Good results with this ointment in six out of seven patients with chrome dermatitis were reported by Dr. Harold N. Cole, Jr., of Western Reserve University, Cleveland, at the meeting of the American Academy of Dermatology and Syphilology in Chicago.

Injections of BAL into the muscles proved of no value. But the three per cent BAL ointment helped in both severe and mild cases in the course of two weeks to four months. The one patient who was not helped could not tolerate the first application of the ointment and the treatment could not be continued.

Science News Letter, December 22, 1951

GENERAL SCIENCE

World War Avoidable

Carnegie Institution president reports that for at least another generation world-wide conflagration may be avoided, but price is continual vigilance.

➤ ANOTHER WORLD war may well be avoided for at least a generation, Dr. Vannevar Bush, wartime head of the government's research and development, said in his presidential report to the trustees of the Carnegie Institution of Washington.

Observing that the avoidance of all-out war is a first condition of sound progress for our civilization, Dr. Bush stated that "the price of peace is to be continual vigilance and a heavy cost in maintaining sufficient defensive power among the free nations."

Discussing our economic system, Dr. Bush suggested that "perhaps we have learned to avoid periodic depressions and dislocations; at least we avoided a postwar slump."

Preservation of freedom and initiative which made this country great is no academic matter and touches science very directly, Dr. Bush declared. The trend toward centralization in government, facilitated by modern scientific techniques, could build a stifling bureaucracy in this democratic country as readily as in any other, he warned.

Government control of research, thus far, has not been onerous, Dr. Bush said, but there is danger under government subsidy and control that there may be an undue emphasis on the immediate and the applied and a lack of support for really fundamental science. Probably seven times as many dollars a year as before the war are now being channeled into research and development.

Industrial Research Boosts Production

Industrial research, Dr. Bush said, has aided more than is generally appreciated in boosting our productivity abruptly when we sorely needed it, and hence in carrying the burden of armament without sacrifice of the standard of living.

Among the Carnegie Institution's research activities in astronomy, terrestrial sciences, biological sciences, and archaeology, during the past year were:

The world's largest 200-inch telescope on Mt. Palomar has reached out and found a distant nebula that has an apparent speed of rushing away from our part of the universe of 61,000 kilometers per second (38,000 miles per second), over a fifth of the velocity of light. When still farther reaches of space are probed, and the recessional velocities of nebulae reach a substantial fraction of light's velocity, astronomers hope to decide whether the red shift in this distant light really means that the outer parts of the universe are flying apart explosively.

Studies suggest that two kinds of feldspar minerals in granite develop after complete solidification at the high temperatures at which this rock in the earth's crust was formed.

Grow Algae on Large Scale

Large-scale growing of the green alga Chlorella will shortly show whether or not it can be produced profitably and used as foodstuff or for other purposes.

First direct evidence was obtained that little bodies within bacteria are actually carriers of hereditary material and therefore are like the nuclei of cells of higher organisms.

The reproduction of minute invaders of bacteria, called bacteriophages, were studied and the phage particles were found to mate at least four times, on the average.

Isolation of a substance that holds the development of leukemic cells in check is being attempted following discovery that heated leukemic cells do not produce cancer-like leukemia in mice.

The time at which, in the guinea pig, the rhythmic electrical changes in the brain, the so-called brain waves, first become detectable was discovered.

Small cavities appear in the heads of human embryos at about 27 to 29 days gestation age, it was discovered, although these transient evolutionary developments common to lower animals are not found in other mammals.

Exploration of the ruins of Mayapan, archaeological site in Yucatan, revealed houses and other evidence of everyday life, confirming Bishop Landa's early Spanish accounts of aboriginal Yucatan.

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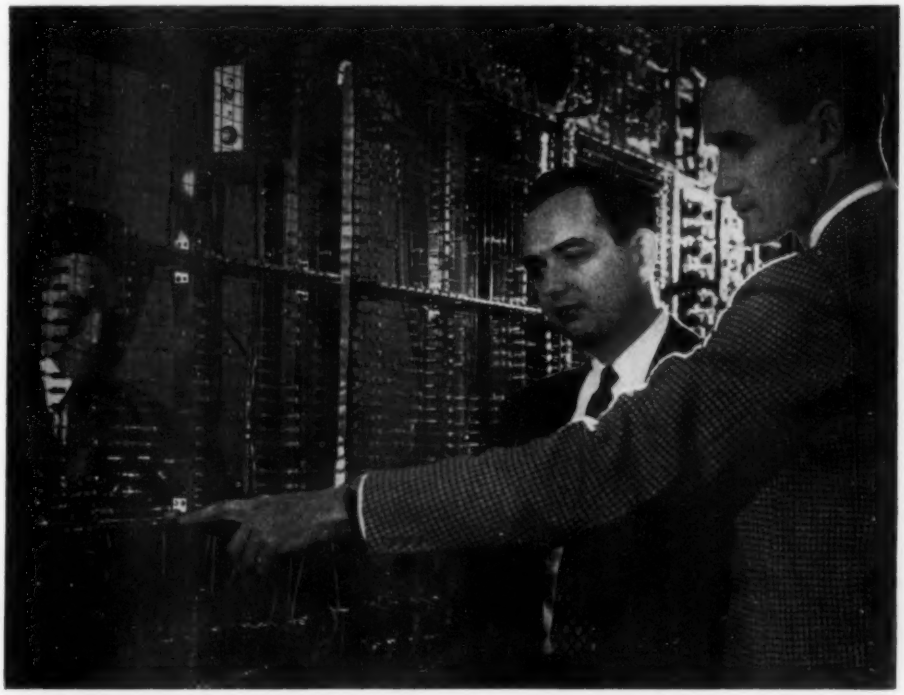
ENGINEERING

Whirlwind, Ultra-Fast "Brain," Now Operating

➤ WHIRLWIND I, an ultra-high-speed digital computing machine, is now in operation at the Massachusetts Institute of Technology.

One of the features of this fast electronic machine, the only large-scale computer of its kind in full operation in this country, is its electrostatic "memory," which exists



"WHIRLWIND" OPERATION—With the ability to act upon and deliver information at a rate of 20,000 times a second, Whirlwind I, the high-speed electronic computer of the Massachusetts Institute of Technology, is suitable for supplying instantaneous instructions such as needed for controlling aircraft traffic patterns. The operation center is shown here.

in the form of specially designed electronic storage tubes.

With its ability to remember, act upon, and deliver information at a rate of 20,000 times a second, Whirlwind I is the first machine suitable for supplying instantaneous instructions for such applications as controlling aircraft traffic patterns.

Whirlwind also has many other applications for the study of industrial process control, insurance handling, inventory, economic analysis, census problems, and scientific and engineering computations.

Completion of trial tests of Whirlwind was announced in a paper presented by Robert R. Everett and Norman H. Taylor of the Digital Computer Laboratory of M. I. T., at the joint American Institute of Electrical Engineers and Institute of Radio Engineers Computer Conference in Philadelphia.

During the next year Whirlwind will be devoted to a variety of engineering, scientific, and industrial applications as well as to military projects sponsored by the Office of Naval Research and the United States Air Force.

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BIOCHEMISTRY

Discover B Vitamin That Concerns Insects, Not Man

➤ DISCOVERY OF a new B vitamin was announced by Drs. G. S. Fraenkel, H. E. Carter and P. K. Bhattacharyya and Miss K. R. Weidman of the University of Illinois at an American Chemical Society meeting in Austin, Tex.

B T is the name of the new vitamin. It is essential for certain insects, among them the Tenebrio beetle which infests grain and flour in storage. It is the same as the chemical, carnitine, found in animal muscle. So far, there is no evidence that man or other higher animals require it the way they do other vitamins.

Science News Letter, December 22, 1951

GENETICS

More Milk for South

➤ COWS FOR the South that will give "considerably higher" milk production than native cattle can be expected within three or four years from crossbreeds being developed in Washington.

U. S. Department of Agriculture scientists report that crosses between India's Red Sindhi bulls and Jersey, Brown Swiss and Holstein cows give a high volume of milk and butterfat even in the warm humid climate of the South.

Although they have not yet found out the exact physiological reactions and, therefore, the reasons why a cow does give less milk in hot weather conditions, they do know that the animal's appetite is less and that it eats less. The animal devotes most of its energy to trying to keep comfortable, just as a person on a very hot day spends much of his energy non-productively—just fanning himself in an effort to keep cool.

The dairy scientists are trying to find out exactly why a cow gives less milk when exposed to continuous heat. When these reactions are known, they believe that they can then breed cows that will be able to stand up under steady hot weather.

Artificial breeding through crossbred bulls is expected to be the best method of getting the higher-producing cows to the farmers quickly. Some southern farmers are taking crossbred cows into their herds now, thus giving the Department additional information about the animal's performance under actual farm conditions.

Under carefully controlled experimental conditions at Beltsville, Md., the scientists found that ten cows, crosses between the Red Sindhi and Jersey, averaged 8,717 pounds of milk and 516 pounds of butterfat in a year. At the Lousiana station under continuous hot weather conditions, production figures for the crossbred animals were less than at Beltsville, but still considerably above the average production level in the Gulf Coast area of 2,000 pounds of milk per year.

A progress report on the crossbreeding program is contained in the annual report of the chief of the Department's Bureau of Dairy Industry.

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Question Box

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What factor threatens the gorilla with extinction? p. 397.

Photographs: Cover, Atomic Energy Commission; p. 387, Massachusetts Institute of Technology; p. 389, Bell Aircraft Corporation; p. 390, Schenley Distillers, Inc.; p. 391 and 393, Fremont Davis; p. 392, U. S. Army; p. 395, Woods Hole Oceanographic Institution; p. 397, Isabelle deP. Hunt.

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GENERAL SCIENCE

Science Review for 1951

Atomic artillery, breeder for more bomb material, advances in understanding photosynthesis, Old Stone Age skeleton among top science highlights of past year.

This summary of the year's happenings in the world of science is limited by space to just the highlights. Most of the events are described in detail in the pages of SCIENCE NEWS LETTER *for the current year. If you wish to refer to any particular report, you may find it readily through the index. (See SNL, June 30, and also the issue that will appear next week, Dec. 29.)*

By SCIENCE SERVICE STAFF

➤ IN MANY fields, ranging from the forefront of atomic energy to a most ancient chapter of Homo sapiens, science and technology has pushed forward during 1951. There have been significant gains of both practical and fundamental importance.

In the application of the atom to military uses, the atomic bomb has presumably been made smaller and applied to artillery and guided missiles capable of being used by ground troops.

The earth's meager supply of fissionable material for atomic energy production began to be augmented by the world's first large atomic breeder. This is a reactor that creates out of thorium a fissionable kind of uranium as the result of neutron bombardment furnished by conventional atomic "fuel," uranium 235 or plutonium.

Big installations looking toward even more atomic energy progress, including the hydrogen bomb plant, were pushed with unprecedented vigor.

Atomic bombs continued to be exploded for test purposes, with a series of U. S. trials on the Nevada desert contrasted with one or more Soviet bomb tests reported.

Some progress at understanding how sunlight is utilized by the green plant seems to have been made, with the goal of achieving photosynthesis artificially which could rival atomic energy in its practical importance. Growing algae as an efficient method of using the sun's energy was investigated more intensively.

Television achieved coast-to-coast transmission through completion of a radio relay system, which can also be used for other multiple communication channels. Color television's practical application was stymied by regulations intended to conserve production facilities and materials.

The exploration of the structure of the atom and fundamental particles continued, with cosmic rays providing the large smashing energies necessary. Perhaps the antiproton has been found.

The most disastrous flood in our nation's history visited the Middle West.

A new method of light production by electricity, called electroluminescence, was developed that promises to make possible glowing ceilings, walls and other surfaces.

Astronomers found that the space between stars is filled sparsely with hydrogen gas.

A new chapter in human history was unearthed in a cave in Iran when skeletons definitely like men of today were found among cultural remains of the Old Stone Age.

Many hopeful medical advances included control of some cancers by removal of both adrenal glands, use of new chemicals for reducing high blood pressure, and cortisone was reported effective in treating more ills.

New methods of synthesizing cortisone were reported, one of which started with a wild Mexican plant root.

The rate of growth of poultry and pigs was increased in practical application of feedstuffs containing antibiotics and vitamin B 12.

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AERONAUTICS

Radio-Radar Controlled Guided Missile Produced

The B-61 Matador, radio-radar controlled guided missile, was put into production and a unit formed for training men in its practical use.

A jet-propelled flying-boat fighter reached the flight test stage in England.

A composite aircraft engine with both piston and jet power was developed.

Airplane wings with degree of sweepback changeable in flight were tested on a new "flying laboratory."

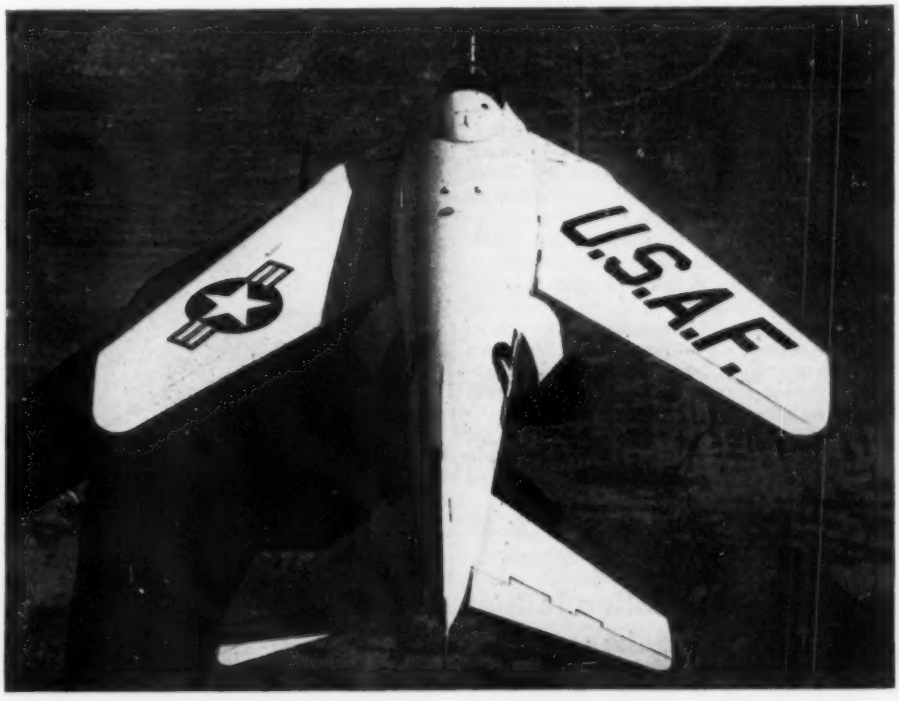
Small ram-jet engines were successfully applied to the rotor tips of helicopters.

A slow- and low-flying airplane was designed and constructed especially for agricultural uses.

A new type of radar sending out a continuous radio wave instead of the intermittent waves commonly used was put in use recording the speeds of models flying faster than sound.

A new mass-production method of producing one-piece hollow-steel propeller blades by extrusion was developed, resulting in blades with greater resistance to severe stress.

Soil density and moisture content were successfully measured by use of a radioactive material and a detector to determine airfield subsoil stability.



CHANGEABLE WINGS—The Bell X-5 has wings whose degree of sweepback can be changed at will. For take-off, climbing and landing, they are best in the forward position, while for great speeds at high altitudes, they are best in the swept-far-back position shown here. The sweep-back will help reduce trouble with shock waves near the speed of sound.

A "wind tunnel" lacking wind but consisting of a vacuum simulating conditions 50 to 70 miles above the earth made possible study of supersonic flight conditions at extremely high altitudes.

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ANTHROPOLOGY-ARCHAEOLOGY

Find Stone Age Skeletons Are Definitely Modern Man

Three Old Stone Age skeletons that were definitely Modern Man were found, with animal bones and flint and stone tools, beneath layers of New Stone Age and Iron Age remains, in Hotu Cave, northeastern Iran.

Search continued for the oldest American: the forgotten bones of Natchez Man were found to be 11,000 years old by fluorine analysis, radiocarbon dating accorded an antiquity of 11,000 years to Tepexpan Man and 10,000 to Folsom Man.

Remains of a 12,000-year-old camp site were found in northern Alaska together with lamellar flakes and burins like those made by Stone Age Man in the Old World.

A link between the Stone Age people of Japan and ancient Americans was found in a collection of pottery from Japan strikingly similar in shape and surface treatment to that of early American Indians.

Remains of the world's first known farmers, who grew grain and raised animals for meat, clothing and milk some 8,000 years ago, were discovered in Iran.

What may be the first tree felled by man, a birch cut down 9,000 to 10,000 years ago, was dug up in England.

Three of America's oldest houses, probably more than 3,000 years old, were unearthed in California.

A baby's horoscope, cut into the plaster wall of the house in Dura where he was born in 176 A.D., enabled archaeologists to date the house.

Excavations were started at Timna in the Western Aden Protectorate, southern Arabia; two large bronze lions (1500 B.C.) were found.

Ruins of a 36-room palace built by Herod the Great (37-4 B.C.) or his son Archelaus, were unearthed at Jericho.

A very rich tomb, that of Mentemhet, Prince of Thebes, was re-excavated near the Valley of the Kings at Luxor, Egypt, with mural inscriptions revealing his career.

An ancient double pottery jar, that whistles as liquid is poured from one side to the other, was interpreted as indicating cultural interchange between ancient people of Peru and Middle America.

The fingerprints of men who sealed some jars of oil about 3,500 years ago were found still clear on the jars when they were unearthed in Mycenae, Greece.

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ASTRONOMY

Microwave Radiation Tells of Hydrogen Gas Between Stars

First direct evidence that the space between the stars is filled with hydrogen gas was obtained when its microwave radiation was picked up by radio telescopes.

Locations of planets Jupiter, Saturn, Uranus, Neptune and Pluto were calculated for the next century with large digital computing machines.

Measurement of the radial velocities of external galaxies more distant than any heretofore recorded showed that nebulae are speeding away from our solar system at one-fifth the velocity of light.

Six new cameras, designed exclusively for tracking meteors and capable of photographing 40 times as many "shooting stars" as are now caught with sky cameras, were installed or neared completion.

Hydrogen nuclei (protons) in the aurora borealis (northern lights) were found to travel up to 2,000 miles per second.

Microwave radiations from four of the brighter spiral galaxies were detected with radio telescopes.

A "radio telescope" 50 feet across, world's most versatile, was installed for listening to microwave radio signals from the sun, moon and stars.

216 new variable stars were discovered in the so-called Sculptor cluster, wide-open spherical galaxy.

The light from only a few of the stars in the Pleiades, it was found, is polarized.

A new satellite of Jupiter was discovered, bringing to 12 the number of moons circling that giant planet.

Eighteen gigantic variable stars, each almost a billion miles across and thus so enormous they would overflow the orbit of the planet Jupiter, were detected in the southern skies.

Four important novae or "exploding stars" were seen to blaze forth—two in the constellation of Sagittarius, the archer; one in Aquila, the eagle; and one in the Small Magellanic Cloud.

New comets discovered include Pajdusakova, Arend-Rigaux Kresak, Wilson-Harrington, Arend and Harrington.

Element 43, technetium, found on earth only by atomic bombardment was almost certainly identified in the solar spectrum.

Forty-four new white dwarf stars were reported, raising the known number of these peculiar stars to about 150.

Giant dust cloud relatively near the solar system was reported in some instances to cut off all except 0.20% of the light from stars beyond it.

The Perseid meteor shower was created forty thousand years ago, or 343 revolutions of Tuttle's comet ago, when it approached the big planet Jupiter, calculations indicated.

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FAST-GROWING CHICKS — Antibiotics combined with vitamin B-12 have been shown to speed considerably the growth of baby chicks.

BIOLOGICAL SCIENCES

Discover Key Mechanism for Changing Sunshine into Food

Discovery was made of the key mechanism by which the green plant converts the energy of sunshine into food and in which a single quantum of light is effective.

Wheat stem rust threatened the whole crop but was held in check by a severe drought.

An efficient method was developed for growing algae commercially, possibly paving the way for the production of algae for food and organic raw materials.

Antibiotics such as aureomycin and terramycin, added to the food of poultry and pigs with vitamin B-12, greatly increased their rate of growth.

A conventional high-powered microscope used in combination with a color-sensitive television camera provided an effective technique for the study of living cells.

How plants are made poisonous to insects by spraying with systemic insecticides was revealed through tagging the insecticides with radioactive elements.

For the first time silver salmon returned to artificial spawning grounds.

A new method was developed for treating difficult plants, such as onions, with colchicine in order to make polyploids, paving the way for bigger and better plants.

A missing chromosome mystery developed with the discovery that chromosomes in human cells from different tissues show a random deviation from the expected number of 48.

A chemical missing link joining animal and plant life at the very beginning of evolution was suggested by discovery of a pigment, protoporphyrin isomer 9, which gives rise to both the hemoglobin of animal blood and the chlorophyll of green plants.

A new blood type, Jka, the tenth human character for which the manner of inheritance is known, was discovered.

Oldest fertile seeds of scientifically established antiquity were found by radiocarbon dating to be some ancient Manchurian lotus seeds over 1,000 years old.

The war against DDT-resistant flies continues with the development of new insecticides and by combining DDT with other chemicals.

A weedkiller known as CMU was developed; it attacks both grasses and broadleaved weeds, leaving only bare soil in its wake.

Five live cahows, oceanic bird believed extinct since 1625, were found in Bermuda; an ancient murrelet was found for the first time in the interior of Oregon.

A powerful fungicide was found in the root system of some banana plants.

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CHEMISTRY-PHYSICS

Probe Nature's Secrets by Study of Cosmic Rays

An anti-proton or negative counterpart of the heart of the hydrogen atom was suggested

by collisions in cosmic rays.

Evidence was offered indicating the existence of a massless fundamental particle, an electrically positive equivalent to the neutrino.

Primary cosmic radiation high above the earth's surface was found to consist of nuclei of the elements from hydrogen to iron and heavier, with hydrogen dominating.

Discovery of a new cosmic ray particle, called the K meson, was reported.

The two heaviest atoms, berkelium 245 and californium 246, were manufactured in the laboratory.

Softly penetrating gamma rays from the rare earth metal thulium were used for inspection of light alloy castings.

New 1,000-curie sources of intense gamma radiation were made of cobalt 60 and tantalum 182 isotopes from the nuclear reactor.

An atomic energy reactor was established near Oslo, Norway, as a joint Dutch-Norwegian project.

Construction began on the billion-dollar reactor complex along the Savannah River in Georgia.

The experimental breeder reactor at Arco, Idaho, designed for long-range testing of the theory of "breeding" fissionable material, went critical.

Three new particle accelerators were placed in operation: an 86-inch cyclotron at Oak Ridge National Laboratory, a 60-inch cyclotron at Brookhaven National Laboratory and a synchro-cyclotron at the University of Chicago.

A new method of analyzing lead to determine the quantities of various isotopes in a sample made it possible to calculate the age at which sample rock was formed; this lead-uranium "clock" improved the accuracy of measurement of lead isotopes.

A "chronotron," an instrument which measures the masses of heavy nuclei more accurately, was developed.

Experience in the Eniwetok tests of atomic weapons demonstrated definitely that lingering radiation need not delay rescue and recovery work after bombing by high air burst.

Theoretical feasibility for nuclear-powered flight was declared established; development studies were initiated.

A technically feasible process was developed for extracting uranium from phosphate rock as a by-product of fertilizer manufacture.

A high-altitude laboratory, second highest in the country, was under construction on White Mountain, Calif.

It was theorized that the sun's energy comes mainly, not from the "carbon cycle," but from the reaction of proton upon proton.

Stable solid crystalline substances were formed when argon and other inert gases were trapped in a lattice of quinol.

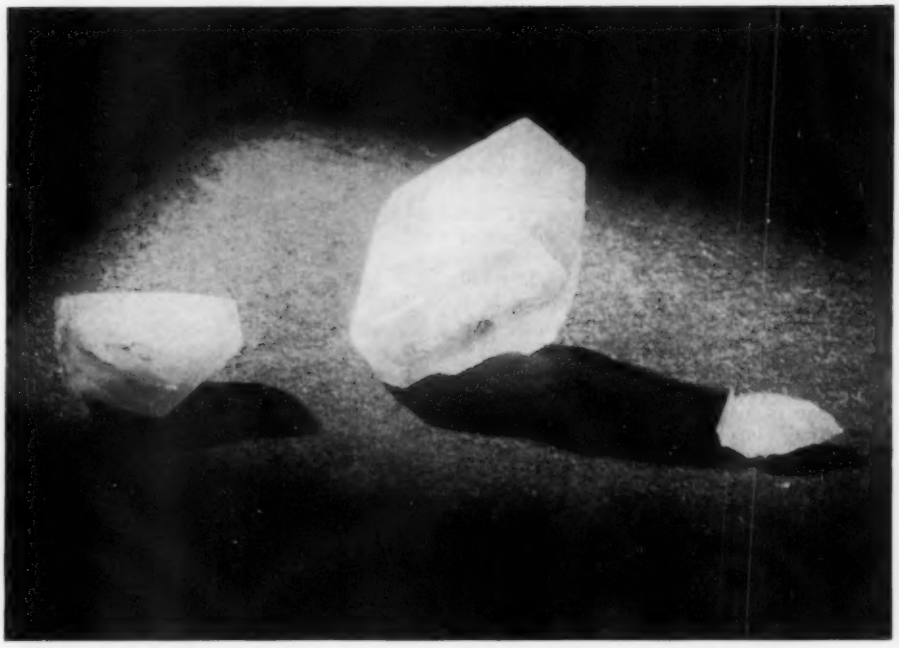
The temperature of the hottest flame on earth, fluorine burning in hydrogen at 8,000 degrees Fahrenheit, was measured by comparing its light to the sun's.

New estimates for the speed of light were 186,283½ miles per second, obtained by Shoran surveying, and 186,280, calculated with a cavity resonator.

Zirconium, useful as a structural material for atomic furnaces, was obtained by separating it from hafnium through use of the fluorine-containing organic chemical, thenoyl trifluoroacetone.

First total synthesis of a complete steroid was announced.

Adrenal gland hormone called compound F, of potential value as an anti-arthritis medicine, was synthesized.



CRYSTAL TRAP—Enlarged clathrate crystals, containing argon trapped in a quinol lattice, have the form shown in this photograph. The actual length of the center crystal is approximately one-quarter of an inch.

Cholesterol, important body chemical, was synthesized.

Final steps in synthesizing cortisone from four substances abundant in nature, ergosterol, diosgenin, stigmasterol and cholesterol, were accomplished.

Practical method of making cortisone from a wild Mexican plant root instead of from ox bile was developed.

Cathode rays were used to initiate polymerization in the manufacture of plastics, causing them to change from liquid to solid.

An improved electrolytic method for producing ozone of high concentration was reported.

Use of concentrated liquid ozone for rocket fuel was proposed.

Helium 3 was solidified by subjecting it to pressure of 600 pounds per square inch at 457 degrees below zero Fahrenheit.

Protection of metal objects against corrosion was achieved by use of vapor from the crystals of a volatile inhibitor inside a paper wrapping.

A new class of chemicals, organosiloxanes, of potential industrial use was made combininb silicones with older type carbon compounds.

Sugar beet molasses was fermented into butylene glycol, a chemical promising for industrial uses, and butanediol, source material for synthetic rubber.

A new process was developed by which nitric acid can replace some of the scarce sulfuric acid in making superphosphate fertilizers.

Finest glass fibers yet made were used to make paper for filtering dust and particles that would result from atomic bomb explosions.

The Nobel Prize for Physics was awarded to Sir John Cockcroft, Cavendish Laboratory, England, and Dr. E. T. S. Walton of Ireland, for their work on transmutation.

The Nobel Prize for Chemistry was awarded to Drs. Edwin M. McMillan and Glenn T. Seaborg, of the University of California, for their discovery and creation of the transuranium elements.

Science News Letter, December 22, 1951

EARTH SCIENCES

Nation Suffered Most Disastrous Flood Yet

Heavy rains in the Midwest produced the most disastrous flood in the nation's history, in Kansas and Missouri.

The Southwest suffered another year of generally below normal rainfall.

Larger than usual drops of water which make up clouds are often formed on relatively large particles of salt, it was found.

Exposure to sunlight will change the shape of silver iodide particles, thus probably destroying their supposed rain-making power, it was found.

Radar was used to record rainfall in great detail over a 50-mile effective radius.

The extremely fast and sharply defined wind current known as the "jet stream" is probably associated with masses of cold and warm air flowing side by side.

Clear air turbulence (turbulence not associated with convective clouds) was observed in the vicinity of the jet stream.

The first mathematical forecast of upper air wind patterns involving use of modern high speed electronic computers was made.

At heights of about 30 miles the change in the air temperature from winter to summer was found to be larger than at the surface, contrary to former belief.

Gulf Stream has eddies and it wanders back and forth, oceanographers discovered.

Sonar revealed details of lake and ocean coastline bottoms in new, quick and less costly method of sounding.

An improved process for extracting liquid fuels from oil shale was developed, promising an ample supply of synthetic gasoline.

A magnetic logging device which measures the magnetic properties of the underground geological formations through which it is passed was developed to aid in locating oil.

A new method for recovering manganese from our low-grade ore was developed.

Radiocarbon dating showed that the last great glacier to cover North America began to melt only about 11,000 years ago.

A theory that the oceans and atmosphere had their origin in hot volatile gases escaping from the earth's interior was proposed.

Living bacteria were found in sediment cores taken from the ocean bottom six and a half miles below the surface where the pressure is more than 15,000 pounds to the square inch.

America's smallest fossil mammal, a tiny shrew, was identified from a piece of jawbone 3/16 inch in size.

A mile-high mountain was found with its top a mile beneath the surface of the Pacific.

There were 155 earthquakes of sufficient strength to record themselves on seismographs so that they could be immediately located, including two long series of damaging quakes in Formosa.

Science News Letter, December 22, 1951

ENGINEERING-TECHNOLOGY

Coast-to-Coast Television Inaugurated in September

Transcontinental home-to-home long-distance dialing of telephone calls was initiated from one city to certain others.

Coast-to-coast television was begun with the inauguration of a transcontinental radio-relay system with 107 relay towers spaced about 30 miles apart.

Relatively cold light production from flat glass plates was developed through use of electroluminescence, produced by current alternations in a luminous condenser containing a phosphor mixed with a plastic.

A tiny eraser-size cobalt-platinum magnet, extremely powerful, was made.

A crystal clutch was developed for use in high speed computers, using chemical crystals which bend when excited by direct current voltage.

Relatively new chemicals, fluorocarbons, were used as a cooling spray to increase greatly the efficiency of electrical transformers.

A tiny junction transistor, only half the size of a pea, and containing germanium, was developed to amplify electrical signals about 100,000 times.

New uses in servo-mechanisms, shock absorbers, recoil mechanisms and brakes were found for magnetic fluid clutch.

A synthetic fiber treated with 275-degree heat was made able to withstand temperatures as high as 1400 degrees Fahrenheit.

Two bonding methods were developed, one for joining metal and glass or ceramics and the other to unite silicone rubbers with steel and other metals, glass or ceramics.

A new aeronautical and engineering research center for the armed services, one of the most important applied science and testing stations of the world, was dedicated at Tullahoma, Tenn.

The feasibility was demonstrated of protecting a cobalt-bonded titanium-carbide ceramal against oxidation by the application of a ceramic-metal coating, promising better heat resistant turbine blades.

A-BOMB MANEUVERS—For the first time, picked Army troops this year participated in A-Bomb tests in the U. S. Soldiers are shown here observing from a safe distance an atomic explosion at the AEC's Nevada Proving Grounds.

An air-gravel concrete was developed for construction purposes in which the sand is replaced by tiny air bubbles produced by a resin or detergent.

A new and inexpensive method of beaming television or sweeping the sky with radar made use of a so-called "G-string antenna mast" which carries the signals along its surface to the top where they are reflected by flat plates.

A marine gas turbine engine was used for the first time in a commercially operating merchant ship.

A crystal which will amplify X-ray energy a million times was grown in the laboratory.

Science News Letter, December 22, 1951

MEDICAL SCIENCES

Control Cancer by Removal Of Both Adrenal Glands

Cancer control by removal of both adrenal glands could be undertaken successfully for the first time because cortisone is available to protect patients from death due to adrenal failure.

An anti-atom bomb substance which protects against irradiation by restoring the function of blood-forming bone marrow was discovered in "press juice" from embryonic mice and their spleens.

Infected wounds, particularly chest wounds, tuberculous abscesses and diabetic gangrene are cleaned up and heal faster when treated with two chemicals from hemolytic streptococci, streptokinase and streptodornase.

Prevention of one kind of cancer by aureomycin treatment of its precancerous stage, believed to be an infection, was reported.

For reducing high blood pressure, the following chemicals were reported: a synthetic, Amphenone B, acting through pituitary, thyroid and adrenal glands; sulfhydryl containing compounds such as BAL; methonium halides; Protoveratrine; two phthalazine compounds; and alkyl-sugar derivatives which promote diuresis.

A brain-produced chemical that may cause some kinds of high blood pressure was discovered.

First evidence that the heart can absorb a drug and break it down into other compounds was obtained with digitalis from radioactive foxglove plants.

Cretinism in dogs, giving a new approach to study of arteriosclerosis, was produced by prenatal and postnatal injections of radioactive iodine.

Large doses of radioactive iodine were reported effective in severe, intractable heart disease.

Triethanolamine trinitrate and a drug extracted from beef hearts, trade-named Myocardone, were reported effective for heart disease.

Two cyclotron produced chemicals, radioactive gallium and astatine, or element 87, were reported promising new weapons against cancer.

Thyroid gland cancer responded to treatment with male hormone for the first time in medical history.

Measuring amounts of two chemicals in blood, inhibitors of rennin and chymotrypsin, gave an index for response to treatment of leukemia and cancer.

Discovery that liver cells turn cancerous when some of their protein content is deleted by an azo dye was reported as giving a new clue to process of cancer formation.

First proof was obtained that nickel has cancer-causing properties.

Eight cancer-causing chemicals were discovered in processed rubber and carbon black.

Discovery of a new blood factor, called Jarrell, was seen giving a new approach to discovering the cause of cancer because a cancer was found the only cause of antibodies to this blood factor.

Ailments for which cortisone was reported effective: the eye diseases, phlyctenular keratoconjunctivitis, sympathetic ophthalmia, and blindness from growth of fibrous tissue in scarring wounds; toxemia of pregnancy; sarcoidosis; swelling of the larynx; severe, exhausting asthma; schizophrenia; and acute skin diseases.

Cortisone was reported capable of delaying liver degeneration due to faulty diet.

Cortisone and ACTH were reported capable of retarding the chest disease, chronic beryllosis; conquering rheumatic heart disease; saving lives in one kind of anemia and the blood disorder, thrombocytopenic purpura; and acting like a tonic for old people before operations or to get them out of bed faster after painful injuries.

ACTH was found effective as a remedy for snake bite and for keeping nerves functioning at their best.

Corticosterone, newly manufactured drug related to cortisone, proved successful in its first trials as a treatment for Addison's disease.

A blood cell test that shows how much ACTH a patient can safely take was developed.

A new synthetic pain-killing drug, more powerful and longer acting than morphine and only three steps chemically from being synthetic morphine, was announced under the trade name, Dromoran.

A faster, longer-lasting local anesthetic, 2-chloroprocaine, was reported promising for blocking pain nerve fibers regionally.

N-allylnormorphine was reported an antagonist to opiate drugs.

Acetylmethadol, related to pain-relieving methadon, was reported successful in treating morphine addicts and promising as pain-reliever in first aid treatment.

A gel of milk casein, sodium lactate and sodium lauryl acetate was reported good treatment for severe burns.

Tibione, German-developed tuberculosis drug, was reported most promising new drug for leprosy.

Thyroid gland cancers in animals have been produced experimentally for the first time by setting up a chain reaction of abnormal activity of two glands.

Promise of a birth control pill was held out in reports of animal experiments with an unnamed synthetic chemical already under trial on human patients for a quite different purpose.

Birth control in 98.2% of 704 patients was provided by a gel containing ricinoleic acid and p-diisobutyl-phenoxypolyethoxyethanol.

A simple test which tells within an hour whether a patient has influenza was developed.

Prospects for chemical conquest of poliomyelitis and influenza seemed brighter from the discovery that ethionine will stop growth of both 'flu and polio viruses, the former in embryonated hen's eggs and the latter in cultures of human tissue, by depriving them of its close relative, protein-building methionine, though treatment will probably come through some other similar-acting chemical, ethionine itself being unsuitable to give patients.

Success in growing poliomyelitis virus on tissue cultures outside the body was achieved, giving hope that weakened strains thus developed could be used for a vaccine.

A simple diagnostic test for polio, of the complement fixation type, was developed but has not yet reached practical use readiness.

A new quick, simple, cheap test, called a flocculation test, for diagnosing trichinosis, brucellosis, tularemia and possibly other parasitic diseases was developed.

Successful transplantation of the heart from one body to another was achieved in laboratory animals.

Construction of a substitute stomach from part of the large intestine succeeded in cancer patients who had to have their own stomachs removed.

The buds of developing permanent teeth were successfully transplanted from the jaw of one cat to that of another.

The first blood vessel bank was established.

Methods for freeze-drying bones and arteries to preserve them for future use were developd.

Hemophilia, hereditary bleeders' disease, can develop in women, contrary to previous medical reports, it was discovered.

A new family of B vitamins, called lipoic acids, were discovered and one of them, alpha lipoic acid, was isolated.

A B-complex vitamin, called the citrovorum factor, which may give better understanding of blood diseases and help in their treatment, was isolated.

Chemicals that are precursors of vitamin B 12 were discovered.

First evidence for hereditary obesity and diabetes was obtained in mice.

A new biological material, amino-iso-butyric acid, hitherto unknown in nature, was discovered in kidney secretions from certain families of normal, healthy humans.

A new, apparently safe sleeping medicine, 3-methyl-pentyne-ol-3, was announced.

Treatment with a fever-causing substance from certain bacteria permitted regrowth of nerve cells in completely severed spinal cords of dogs and cats by preventing growth of scar tissue.

Two antivirotics, that may stop viruses as antibiotics stop bacteria, were discovered, named viscosin and ehrlichin.

Speedy remedy for ivy poisoning was found in zirconium.

Wild birds were found to be the natural reservoir for the virus of encephalitis, sometimes called "sleeping sickness."

Tomatoes can be made to yield sex hormones and may become plentiful, cheap source of cortisone.

Feedback electrical systems were developed for control of anesthesia.

A plastic hypodermic needle for caudal anesthesia was made.

A plastic sponge was used as a framework for living tissue in reparative surgery.

A new hip-lift or hip-roll method of giving artificial respiration more effectively was developed.

The Nobel Prize in medicine was awarded to Dr. Max Theiler, of the Rockefeller Foundation, for his researches leading to successful vaccine against yellow fever.

The Guinea Pig Club, of men and women who have served as human test material for medical research, was organized under the formal name, Walter Reed Volunteers.

Cornerstone for a new national research hospital, the Clinical Center of the National Institutes of Health, U. S. Public Health Service, was laid by President Truman.

Science News Letter, December 22, 1951

PSYCHOLOGY-PSYCHIATRY

Diet Plus Shock Treats Mental Ills Successfully

A fat-protein diet producing acidosis, combined with electric shock, was successful in treating mental illness.

The fiber projections from the brain's frontal lobes which are the part of the brain governing anxiety were exactly located.

Symptoms of mental illness were produced experimentally in normal persons by an ergot derivative, affording scientists an opportunity for study of them.

Loss of a large part of the brain cortex in monkeys was partially compensated for by extensive training in problem solving previous to the operation.

Knowledge of the developmental anatomy of the brain cortex of the young human infant was significantly advanced by microscopic studies.

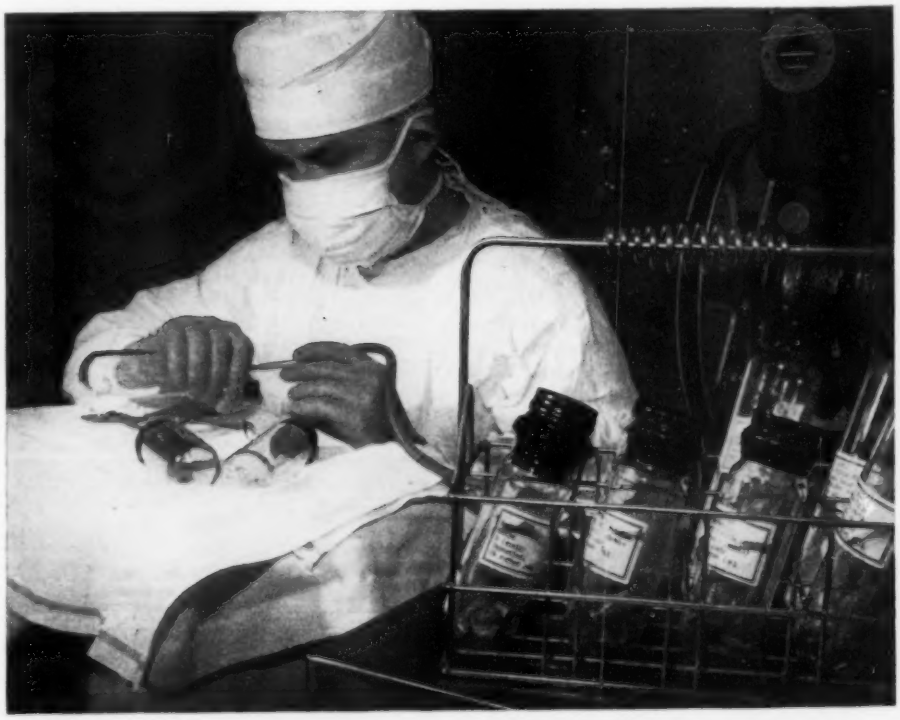
Glutamic acid fed to pregnant rats was found to improve the learning ability of the offspring.

Glutamic acid prevented deaths from noise-induced convulsions in susceptible mice, thus promising to throw light on the chemical processes in the brain.

Precise measurement of eye movement in binocular vision showed that the two eyes scan an object independently and the brain must combine both spatial and temporal patterns.

The mechanism of depth perception is different when the object observed is large than it is when the object is so small that the image is smaller than the eye's fovea.

A one-eyed person can perceive depth, distance and speed well enough to land an airplane successfully, tests in the Air Force showed.



BANK FOR BONES—The pieces of bone in the tubes in this rack have been freeze-dried at the Naval Medical Center, Bethesda, Md., and thus they can be safely kept at room temperature.

By listening to the electrical signals picked up from individual retinal cells of cats and other animals, a scientist found that the visual cells respond differentially to different colors.

When an observer is lying on one side, the lower eye is more sensitive to red, the upper one to blue, it was reported.

Perceptual behavior was extensively investigated as an important key to the understanding of human personality.

Appointed leaders tend to behave more democratically than emergent leaders in problem-solving situations, it was observed.

It was proposed that Menticide, or political intervention in the individual human mind to force confessions or impose an ideology, should be declared an international crime.

Decision-making conferences were found to be most productive when they showed most adequate communication (in terms of audibility, understandability and freedom to participate) and were most orderly in their treatment of topics.

Science News Letter, December 22, 1951

PATENTS

Top Patents Include Electroluminescent Phosphor

Numbers following items refer to U. S. Patents. Printed copies of patents can be obtained from the U. S. Patent Office at 25 cents each. Order by number, do not send stamps, and address orders to the Commissioner of Patents, Washington 25, D. C.

Notable and interesting inventions patented during the year include:

Electroluminescent lamp in which voltage is applied direct to a phosphor. Patent 2,566,349.

Cheaper germanium crystals for germanium electrical rectifiers and amplifiers using a less pure germanium as a starting material. Patent 2,565,338.

Radio equipment, truck-mounted, for determining all radio programs being received by home instruments in a neighborhood. Patent 2,552,585.

Semiconductive metal, usable in rectifiers, made largely of silicon but with additives of boron or alumnum, and phosphorus, arsenic or antimony. Patent 2,567,970.

Methylene bromide and another brominated hydrocarbon as the basis of fire extinguisher for burning gasoline. Patent 2,569,979.

Aluminum wire containing a small amount of boron to give strength and better electrical conductivity. Patent 2,545,866.

Chemical treatment process by which sea water can be made suitable for irrigation purposes but not for household uses. Patent 2,546,071.

Sonic proximity fuze to cause bombs dropped from airplanes to explode at the proper distance from the earth to cause most damage. Patent 2,536,327.

Coal-burning gas-turbine electric locomotive which uses finely pulverized coal as a fuel. Patent 2,533,866.

Electronic systems that make it possible to use powerline alternating electric current to operate direct-current motors. Patents 2,530,949 and 2,530,993.

Method used in modern artificial rain-making of forming crystals of ice in a supercooled cloud by the use of dry ice pellets dropped from an airplane through the cloud. Patent 2,570,867.

Paint for highway lines containing tiny beads of glass and titanium dioxide pigment. Patent 2,574,971.

Electric igniter to start the coal fire in a stove or furnace without kindling. Patent 2,549,806.

Light-weight concrete containing aluminum powder in an aqueous solution of a water soluble, organic sulphonate emulsifying agent to give increased resistance to water and heat insulation. Patent 2,534,915.

Better quality synthetic rubber containing calcium silicate as a reinforcing pigment. Patent 2,532,665.

Magnesium alloy, with tensile strength at elevated temperatures, utilizing the rare earth metals cerium, neodymium and praseodymium. Patent 2,569,477.

Wartime-developed radio beacon for guiding airplanes in flight by a coded signal. Patent 2,568,265.

Process for treating waste citrus liquors to obtain oil and other constituents. Patent 2,561,072.

Improved isoparaffinic aviation fuel for military and civil planes using minor portions of methyl substituted pyridines. Patent 2,560,898.

Stable insulating iron oxide coatings for ferrous metals which also protect against rusting. Patent 2,543,710.

High-lift airplanes requiring only a short runway and usable in areas where space for ordinary runways is lacking. Patent 2,541,704.

High-temperature stainless steel, usable where ordinary stainless steel can not be employed. Patent 2,540,509.

Ductile cast iron, containing zirconium, which can be used to replace steel in certain applications. Patent 2,538,263.

Electromagnetic ignition apparatus for fuel gas in the kitchen range or household furnace. Patent 2,536,468.

Silicone resin preparation to make brick and masonry walls water-repellent. Patent 2,574,168.

Fluid-tight, gas-tight case for ordinary cameras for taking pictures underwater or in gases that might ruin a film. Patent 2,573,885.

For invalids walk-in bathtub with a non-leak door on the side. Patent 2,570,053.

Vest-pocket capsule made of sugar and bicarbonate of soda and filled with an alcoholate for dropping in a glass of water to make a champagne-wine-like drink. Patent 2,537,453.

Improved cross-wind landing gear for airplanes. Patent 2,538,388.

Science News Letter, December 22, 1951

GENERAL SCIENCE

Top 1951 Science Stories

➤ THE TOP ten important advances in science and technology during 1951 as picked by Watson Davis, director of SCIENCE SERVICE, are:

1. Use of atomic bombs in artillery and guided missiles, and the beginning of operation of a breeder reactor for making fissionable material out of thorium.

2. Cancer advances that include control by removing both adrenal glands and use of aureomycin to treat a precancerous stage.

3. Use of a new pain-killing drug (Dromoran) that promises to free us eventually from reliance upon morphine from imported opium.

4. Discovery of anti-atomic radiation substance, pressed juice from embryonic mice, that restores damaged blood formation in bones.

5. Evidence that space between the stars is filled sparsely with hydrogen gas.

6. Development of new method of light production from glowing surfaces, called electroluminescence.

7. Production in quantity of first U. S. guided missile weapon, the Matador.

8. Discovery of modern type human skeleton in Old Stone Age cave in Iran.

9. Methods of synthesis of cortisone from vegetable raw materials, promising larger and cheaper production of this drug.

10. Use of antibiotics and vitamin B-12 in promoting growth of poultry and pigs.

Science News Letter, December 22, 1951

GENETICS

Baby Mice Are Born to Unrelated Foster Mothers

➤ BABY MICE have been raised from the early egg stage in foster mothers without the necessity of performing a radical operation to implant the fertilized eggs into the reproductive tract of the mouse.

Success in this technique, which will be of use in breeding and other experiments, is announced by Dr. R. A. Beatty of the Institute of Animal Genetics, Edinburgh, in a communication to the British journal, NATURE (Dec. 8).

The process is called inovulation, analogously with artificial insemination, now widely practiced in research and practical animal breeding. Fertilized eggs are taken from one mouse by an operation and then by means of syringe apparatus are placed in the uterus of the foster mother. Heretofore an abdominal operation on the foster mother has been necessary.

The baby mice thus produced are not related genetically to the mother that gives birth to them.

Science News Letter, December 22, 1951

INVENTION

Patent Liquid Rouge Containing Perfume

➤ LIQUID ROUGE would replace the widely used solid face rouges in an invention for which Leola Silva, Oakland, Calif., received patent 2,578,210. The coloring material is in a solution of water and ethyl alcohol, both of which evaporate when the liquid is applied to the face. For coloring, one of several coal-tar dyes may be used to which is added mercurochrome. Perfume is also included. The thin film left after evaporation adheres strongly.

Science News Letter, December 22, 1951

MEDICINE

Syphilis Shortens Life

Find evidence from carefully controlled tests with mice that syphilis cuts life span short. Penicillin and sulfa drugs still best for treating disease.

➤ EVIDENCE THAT syphilis shortens the life of the infected person was presented by Dr. Paul D. Rosahn of Yale University School of Medicine at the meeting of the American Academy of Dermatology and Syphilology in Chicago.

Heretofore medical scientists have not been sure whether people with syphilis died earlier than non-syphilitics because of the disease or whether their shorter lifespan was due to social and economic factors. Syphilis is more prevalent in socio-economic groups in which the mortality rates are highest.

To get his evidence, Dr. Rosahn used mice of the same genetic, or inherited background, putting a pair of the same sex from the same litter in a cage. One had syphilis, the other did not. Otherwise the mice were the same and lived in exactly the same environment. The females without syphilis lived about 80 days longer than their syphilitic sisters, and the males without syphilis lived about 88 days longer than their syphilitic brothers.

Penicillin and sulfa drugs are still the most desirable for treating syphilis and gonorrhea, although the newer antibiotic drugs are effective in most instances, Dr. Raymond C. V. Robinson of Johns Hopkins School of Medicine reported.

Cortisone, used as drops or ointment, is good medicine for a syphilitic eye disease if used early enough, he said. If continued long enough, there may even be "an apparent clinical cure." He warned that penicillin treatment of the underlying syphilitic infection should be given at the same time.

Patients getting "prophylactic" treatment for syphilis, when they think they have been exposed to the disease but have not yet had time to develop it, deserve the same thorough follow-up as patients get when they are treated for known syphilitic infection.

This was stressed by Dr. Charles R. Rein of New York. He also warned that a patient getting penicillin for pneumonia, or some other infection, might get enough to mask syphilis symptoms if they were in the incubation stage of that disease. He advised thorough laboratory methods to avoid this.

Science News Letter, December 22, 1951

***A-BOMB SAFETY FOR HARBORS**—Tests in this artificial harbor are helping to tell civil defense experts how much time is needed after A-bomb explosions before entry is safe. Careful scrutiny will show the layer of fresh water on top of salt water in this tidal flushing flume.*

OCEANOGRAPHY

High Mountains Rise From Pacific's Floor

➤ THIRTY-FIVE MAJOR sea mountains, from 3,500 to 12,400 feet high, rise from the floor of the Gulf of Alaska, two oceanographers of the U. S. Navy Electronics Laboratory in San Diego, Calif., report.

The mountains are divided into two area-wide groupings. One type is of volcanic origin and the other was formed orogenically, that is, when the earth's crust folded. Drs. Henry W. Menard and Robert S. Dietz believe that the volcanic mountains formed along a major rift in the crust. Most of the soundings on which their study is based were made by the U. S. Coast and Geodetic Survey and the Hydrographic Office of the U. S. Navy.

Science News Letter, December 22, 1951

ENGINEERING

Artificial Harbor Tests Effects of Subsea A-Bomb

➤ CIVIL DEFENSE experts will know how much time it will take to make our harbors safe after an underwater A-bomb explosion as a result of a "theoretical flume" in operation at Woods Hole Oceanographic Institution, Woods Hole, Mass.

The flume is an oblong glass channel. Fresh water comes in at a steady rate at one end and salt water, regulated to simulate the tides, comes in and goes out at the other end. When dye is added to the salt water, it can be seen moving up the stream as a sort of wedge.

With this model of a theoretical harbor, scientists can study how long it will take for radioactive water and debris to be flushed out to sea. The same knowledge can be applied to biological warfare agents used to contaminate one of our harbors.

More important right now are the peacetime applications. Sewage and industrial pollution emptied into our rivers are a problem in many harbors. A study of the interaction of the river and the salt water tides in this flume will give engineers knowledge of the safe rate at which waste can be introduced into the harbor.

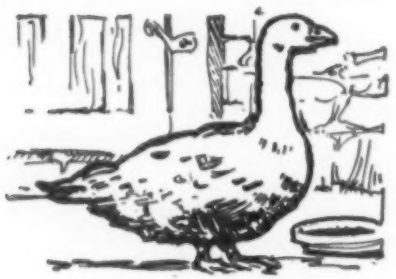
The flume is housed in a separate building, one of the few anywhere with a waterfall coming out of one of its walls. The channel is 20 feet long. A moving weir produces the tides.

Harlow Farmer, hydraulic engineer of the Massachusetts Institute of Technology, is in charge of the flume which was constructed under a contract with the Office of Naval Research.

Science News Letter, December 22, 1951

ORNITHOLOGY

NATURE RAMBLINGS



Christmas Goose

► CHRISTMAS, COMING so soon after Thanksgiving, is rather hard on the poultry population. Many thousands of turkeys that escaped the late November massacre have lost their lives during the past few days and weeks, and will sizzle on Christmas platters come Dec. 25.

Although turkeys are popular for the holiday feast, the Christmas goose is coming back into its own. Long before America was discovered, and with it the turkey, the goose held undisputed sway as the bird of the day at Christmas and other festive seasons.

Even where turkeys are abundant there are many who prefer goose, for its liberal natural larding makes it easier to roast and also makes the stuffing tastier.

As the turkey is the most recent addition to the poultry yard, the goose was probably its first inhabitant, though possibly the duck might claim that honor. Both duck and goose, as well as the common barnyard hen, were man's domestic companions long before the dawn of written history.

The goose especially has had the esteem of primitive peoples, who dedicated it to one or another of their pagan gods. Even people so civilized as the Romans considered the goose sacred to Juno; the legend of the saving of the city by the alarmed cries of her flock at midnight is a well-known one.

In the old-world rural economy, the goose was as useful a bird as the hog was an animal. Nothing but the bones and the beak were thrown away. And the goose is still one of the most completely usable of all our domestic animals. Besides yielding a great lump of meat upon its involuntary demise, it gives us quantities of huge eggs before that event.

In the old days the fat of the Christmas goose also used to yield a pot of "goose grease," sovereign remedy for colds in the chest, aches and pains, or whatever else ailed you, and the fat was good in cooking as well as in medicine.

The goose supplies whole snowstorms of feathers and down for cushions and old-fashioned feather-beds, and can be plucked alive without apparent inconvenience. If you travel in the Rhine country, you will at first be nearly smothered at night, for you will not merely sleep on a feather bed; you will sleep under one.

Finally, the heavy quills of the goose's wings were instruments of both peace and war, for they guided the shafts of the archers and formed the quills of the clerks. Whole wing-ends with feathers still affixed made excellent hearthbrushes. And even the bones became meteorological instruments.

The goose has been falsely defamed as a foolish bird, but it really is not.

Science News Letter, December 22, 1951

MEDICINE

With Ulcers, No ACTH

► CORTISONE AND ACTH are bad medicine for stomach ulcer patients. But studies of their effects show that the emotional stress and strain which can bring on a stomach ulcer act through gland hormones as well as through the vagus nerve.

These findings are reported to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Dec. 15) by Drs. Seymour J. Gray, John A. Benson Jr., Robert W. Reifenstein and Howard M. Spiro of Boston.

The hormone mechanism for stress to ulcer formation runs from the hypothalamus in the brain to the pituitary gland next to it, then to the adrenal gland through ACTH, and then to the stomach through cortisone. ACTH from the pituitary is known to stimulate the adrenal glands to produce cortisone.

The Boston doctors gave ACTH injections daily for three to four weeks to persons with normal stomachs. In every case the acid secretion by the stomach rose to the level found in cases of active ulcer. Cortisone produced the same effect.

One young man, they report, who got four courses of ACTH over a six-month period for severe arthritis developed an ulcer and hemorrhage and died in shock. This and similar cases lead the Boston doctors to warn that prolonged treatment with ACTH or cortisone is a hazard to patients with stomach ulcers. They advise X-ray examination of the stomach before starting the hormone treatment and use of antiacids during the treatment.

Similar precautions, they state, may be necessary in giving cortisone or ACTH to patients with brain tumors and conditions such as chronic asthma or heart trouble who suffer from oxygen deficiency.

Science News Letter, December 22, 1951

MEDICINE

Emotional Upsets Cause Cold Sores and Fever Blisters

► ADD COLD sores and fever blisters to the list of ailments which may in some cases be brought on by emotional upsets.

Studies showing this were reported by Drs. Harvey Blank of the University of Pennsylvania and Morris W. Brody of Temple University, both in Philadelphia, at the Chicago meeting of the American Academy of Dermatology and Syphilology.

Fever blisters are caused by a virus which most adults harbor. Exposure to the sun, stomach upset, colds and other stimuli may bring on the blisters in these persons.

The small group of persons who repeatedly get cold sores and fever blisters without apparent cause are those the Philadelphia doctors find get them from psychiatric factors.

"Psychological" cold sores, they reported, attack the very "good" people, who are passive, submissive and anxious to please and gain approval, but whose concern with conforming to the good and true conflicts with their actual circumstances. The conflict is such that emotional upsets including cold sores result.

Science News Letter, December 22, 1951

ENTOMOLOGY

"Hobo" Flies Travel Miles Searching Food

► FLIES ARE "hoboes" and may travel eight miles or more to get food, scientists of the U. S. Public Health Service report.

They used radioisotopes to trace tagged flies and in recent tests in Georgia and Arizona released more than 200,000 of these "hot" flies, later trapping many of them at fixed distances from the release point.

How far the flies roam is important both in measuring their role in transmitting diseases and in planning effective control operations, they told the American Association of Economic Entomologists meeting in Cincinnati. Radioactive tagging is the latest tracking method and is so fast that 10 "hot" flies can be isolated from 50,000 in less than five minutes. The amount of radioactivity used is harmless—less than that in radium watch dials.

Flies move toward food or breeding material, called "attractants" by entomologists. By hopping from attractant to attractant they cover considerable distances, and communities, therefore, must stress the removal both of breeding sources and of food in order to get proper fly control, the scientists concluded.

Reporting on the Georgia and Arizona tests were Dr. H. F. Schoof, R. E. Siverly, J. A. Jensen, K. D. Quarterman, W. Mathis and J. W. Kilpatrick of the Health Service's Communicable Disease Center.

Science News Letter, December 22, 1951

MEDICINE

Asthma, Arthritis Relief

➤ THE REASON why people suffering from asthma, arthritis, skin diseases and various other disorders get relief when they go to a warm, dry climate is that such a climate favors evaporation of perspiration from the skin.

Studies supporting this explanation were reported by Dr. Marion B. Sulzberger of New York University at the meeting of the American Academy of Dermatology and Syphilology in Chicago. Dr. Franz Hermann of the same university collaborated in the studies.

A great variety of diseases and symptoms can result, these scientists find, from very small, superficial damage or disturbance of the sweat organs. Sometimes the damage can only be seen by microscopic examination of the sweat organs and pores.

Diseases caused in this way range from ordinary prickly heat to practically incurable forms of chronic skin eruptions. When the patient with these sweat gland disorders is exposed to a hot, humid environment, such as the tropics or the temperate zones during humid, hot periods, he may also have various severe bodily disorders. Deteriorating heart function, disturbances of circulation and breathing difficulties are among these.

Disorder of the sweat organs, Dr. Sulzberger said, is like failure of the automobile radiator which is supposed to keep the car cool while running. When the radiator fails, other parts of the car are apt to break down and the same thing may happen to a person whose sweating mechanism breaks down.

About the only successful treatment for many such persons has been to send them to a warm, dry climate, such as desert areas of Arizona, Texas, California, Egypt and Palestine.

Because of the wide variety of serious disorders that may result from sweat organ failures, Dr. Sulzberger said that more studies of a fundamental nature should be made, using "climatized rooms" to learn the effects of deliberately produced changes in heat, humidity, barometric pressure, air movement and the like.

Science News Letter, December 22, 1951

ZOOLOGY

Predict Gorilla Extinction

EXTINCT IN CENTURY?—Gorillas may be threatened with extinction within 100 years. This picture is of Bamboo, the Zoological Society of Philadelphia's giant gorilla, who was 25 years old this year.

➤ THE GORILLA will become extinct within 100 years, unless humans make a special effort to prevent such a fate. This popular zoo animal "has no chance of survival in competition with man," predicts Dr. Robert M. Yerkes, professor emeritus of Yale University.

We must take steps either to protect the gorilla in its natural habitat—a narrow strip of Africa near the equator—or to learn how to breed it successfully in captivity. While there is yet time, Dr. Yerkes urges an intensive study of the gorilla. Man does not know much about its physiology or psychology. Even the number of chromosomes, bearer of inheritance traits, is a guessing matter, he reports.

There are almost twice as many gorillas in the U. S. now as two years ago, his survey shows. Scientists should get together with zookeepers and circus men and make arrangements for thorough and accurate studies of all details of the gorilla's daily life.

Being large animals, sensitive to diet and often quite difficult to handle, gorillas have not usually kept well in captivity. But recently there has been a large influx of the animals into this country. This increase is due, he states, to recent immigrants starting agricultural development of the parts of West Africa where the gorilla is found and to air transportation making it much easier to ship the animal.

Because gorillas are so expensive—thousands of dollars compared to hundreds for chimpanzees—they have rarely been owned by individuals or institutions interested mainly in research. But, he says, it is quite easy for the scientist and the animal's caretaker to conduct the necessary studies without upsetting the daily routine of the gorilla and without interfering with the public's view of this huge, human-like animal. Indeed, the investigator may be an advantage to the animal, providing "diversion, exercise and novel situations," Dr. Yerkes reports in the JOURNAL OF MAMMALOGY (Nov.).

Science News Letter, December 22, 1951

METEOROLOGY

Snow and Cold Weather Predicted for Holidays

➤ SNOW AND COLD weather over most of the nation will make this Christmas holiday season an "old-fashioned" one.

The Weather Bureau's extended forecast section predicts temperatures below seasonal normals over most of the nation. New England and Florida and the West Coast are the only exceptions. In New England and Florida, near normal temperatures are forecast, while the West Coast can expect warmer than usual weather.

Much of the precipitation from now until the middle of January will be snow, the forecasters state, and it is expected to exceed the usual amounts over the southern half of the nation, in the Ohio Valley and in the middle and north Atlantic states. Elsewhere, less than normal amounts of precipitation are forecast.

Science News Letter, December 22, 1951

A light-weight *concrete,* particularly suitable for heat insulation, is made by putting powdered aluminum and sodium hydoxide in the mix; chemical action releases bubbles creating gas-filled cells.

The practice of renting hives of honeybees by seed growers is increasing because wild bees and other insects necessary for *pollinization* are no longer sufficiently abundant.

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Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organization.

AMERICAN GOVERNMENT TODAY—Ernest B. Fincher, John H. Ferguson, and Dean E. McHenry—*McGraw*, 583 p., illus., $5.00. A high-school text intended as ammunition in the war against totalitarianism.

AMERICA'S WEAPONS OF PSYCHOLOGICAL WARFARE—Robert E. Summers, Ed.—*Wilson*, 206 p., $1.75. A round-up of information on American strategy in the cold war.

THE ATTITUDE THEORY OF EMOTION—Nina Bull—*Nervous and Mental Disease Monographs*, No. 81, 159 p., illus., $6.00. This theory of attitude as mediator in the body-mind relationship is accompanied by accounts of psychological experiments, a discussion by a neurologist of the physiologic evidence for the theory, and an account of earlier studies and theories.

BOILER FEED WATER TREATMENT—F. J. Matthews—*Chemical Pub. Co.*, 3rd ed., 207 p., illus., $4.50. Incorrect treatment will inevitably give rise to a multitude of operating troubles—notably scale formation, corrosion and priming.

CONSERVATION: A Handbook for Teachers—Wilson F. Clark and others—*New York State College of Agriculture*, Cornell Rural School Leaflet Vol. 45, No. 1, 64 p., illus., paper, 20 cents. Simple experiments on such subjects as mapping, the effect of shade and moisture on temperature, and soil properties, together with study outlines and bibliography, should help the rural teacher present this important subject.

EMPLOYMENT, EDUCATION, AND EARNINGS OF AMERICAN MEN OF SCIENCE—*Govt. Printing Office*, Dept. of Labor Publication No. 1027, 48 p., illus., paper, 45 cents. More leading scientists are employed in educational institutions than in any other type of employment, although salary levels are considerably lower there than in government or private industry.

THE FACE OF WAR—Charles Jones and Eugene Jones—*Prentice-Hall*, 166 p., illus., $5.00. Photographs, by the twin photographers, and text show what life is really like for UN soldiers in Korea.

FOSSIL LIZARDS OF THE WEST INDIAN GENUS *ARISTELLIGER* (GEKKONIDAE)—Max K. Hecht—*American Museum of Natural History*, 33 p., illus., paper, 25 cents.

GENETICS AND THE ORIGIN OF SPECIES—Theodosius Dobzhansky—*Columbia University Press*, 3rd ed., revised, 364 p., illus., $5.00. "The long pageant of evolution extending over one billion years appears to have been brought about by fundamental causes which are still in operation and which can be experimented with today."

A GUIDE TO THE INDIAN TRIBES OF OKLAHOMA—Muriel H. Wright—*University of Oklahoma Press*, 300 p., illus., $5.00. Sixty-seven tribes, of which only 29 are still listed by the U. S. Indian agencies as being represented in Oklahoma today, are described. The author is granddaughter of a Choctaw chief.

HOW INDUSTRY IS SOLVING ITS PACKAGING PROBLEMS—*American Management Association*, 39 p., paper, $1.25. Papers by men from several different companies telling how specific packaging problems have been approached and solved.

INTERPRETATION OF AEROMAGNETIC MAPS—V. Vacquier and others—*Geological Society of America*, 151 p., illus., $2.25. Now that magnetic surveys can be made with speed, their interpretation by this method may tell geologists more about the structure of the earth's crust and help them solve specific regional problems.

INVENTIONS AND THEIR MANAGEMENT—Alf K. Berle and L. Sprague de Camp—*International Textbook Co.*, 3rd ed., 742 p., illus., $7.50. Third edition of a book planned to guide inventors.

JANE'S ALL THE WORLD'S AIRCRAFT: 1951-1952—*McGraw*, 468 p., illus., $20.00. Information on the air forces, civil aviation, and aircraft industries of all nations.

LEGISLATION FOR PRESS, FILM AND RADIO: Comparative Study of the Main Types of Regulations Governing the Information Media—Fernand Terrou and Lucien Solal—*UNESCO*, 420 p., $2.00. An account of provisions in national laws and constitutions for the protection of freedom of speech and press and showing how, as in the case of Argentina, excellent constitutional expressions of the principle of liberty have been negated or attenuated by government action.

MANAGEMENT PLANNING UNDER MOBILIZATION—*American Management Association*, 44 p., $1.25. Includes a paper by General McNarney.

MILITARY PACKAGING REQUIREMENTS: Outlook for Materials and Equipment—*American Management Association*, 60 p., paper, $1.25. Papers on various aspects of this subject presented at the Packaging Conference last spring, together with the discussions.

NEW PERSPECTIVES ON THE ADMINISTRATOR'S JOB—*American Management Association*, 35 p., $1.25. A round-table discussion and papers on problems of Administration in a Democratic Society, and Management Planning.

PLANTS OF BIG BEND NATIONAL PARK—W. B. McDougall and Omer E. Sperry—*Govt. Printing Office*, 209 p., illus., paper, $1.00. Pictures and descriptions will help visitors to this park on the Rio Grande identify the plentiful and varied vegetation.

PRELIMINARY NOTE ON THE TAXONOMY OF CANADA GEESE, *BRANTA CANADENSIS*—Jean Delacour—*American Museum of Natural History*, 10 p., 25 cents. This well-known species presents many taxonomic difficulties; twelve sub-species are recognized here.

PROCESSING OKRA SEED FOR OIL RECOVERY—C. Ray Holbrook, Jr., and A. Cecil Wamble—*Texas Engineering Experiment Station*, 11 p., illus., paper, free upon request to publisher, College Station, Texas. A cottonseed oil mill, slightly modified, will process okra seed.

REFERENCE BOOK OF INORGANIC CHEMISTRY—Wendell M. Latimer and Joel H. Hildebrand—*Macmillan*, 625 p., illus., $5.00. Brought up to date by a discussion of the heavier elements, nuclear fission, pile reactors, radioisotopes, etc.

WHAT'S NEW IN FARM SCIENCE—*University of Wisconsin Agricultural Experiment Station*, Part Two of Annual Report, 108 p., illus., paper, 10 cents. Advances in soil management, pasture and hay, livestock and poultry, and other agricultural fields not discussed in part one.

Science News Letter, December 22, 1951

VETERINARY MEDICINE

Bull's Eye Made—Artificial and Plastic

➤ A HEREFORD show bull in West Virginia will soon be sporting an artificial plastic eye made from special prescription by the American Optical Company, Southbridge, Mass.

In a fight with another bull, the bull's eye was ruptured. The plastic eye, largest made by the same technique as human artificial eyes, will improve the animal's appearance at fairs.

Science News Letter, December 22, 1951

MEDICINE

Plenty of Insulin Assured for Disasters

➤ IN THE event of atomic bombing or other similar major disaster, there will be enough insulin to keep alive the diabetics in the population.

This reassurance comes from the Committee on Emergency Medical Care of the American Diabetes Association, Inc.

Present inventories of insulin in this country are at an all time high level and are enough to meet anticipated needs for at least two years. But civil defense authorities must prepare plans for moving supplies from one area to another where needed in case of disaster, the committee states.

The diabetes association, in a report to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Dec. 1), states that in addition to provision for insulin, care of diabetics in a mass disaster requires the following: training of every diabetic to care for himself; training of dietitians and dietitian aids to help diabetics get and eat the right diet, take their insulin and test urine for sugar; provision, particularly in case of rationing, of suitable food supplies for diabetic diets.

Diabetics themselves, because of their knowledge of the use of hypodermic needles and syringes, can be "invaluable in caring for other diabetics and as auxiliary nursing aids," the committee report points out.

Suggested directions to be given diabetics as part of the national civil defense preparedness program include the advice that diabetics should always carry with them identification showing they are diabetics.

Every diabetic taking insulin, the directions state, should have his usual one extra bottle in addition to current needs and one extra insulin syringe with two needles.

Science News Letter, December 22, 1951

PHYSICS

Strength in Antifreeze

➤ THERE IS no guesswork in determining if the mixture in the automobile radiator contains enough antifreeze to give the required protection with a practical protection indicator developed at the National Bureau of Standards.

It may be used with all types of antifreeze solutions or any mixture of them now on the market.

The hydrometer usually employed is satisfactory if the antifreeze solution contains only ethylene glycol or one of the common alcohols. On the other hand, it has little value in determining the effectiveness of antifreeze mixtures containing propylene glycol, a mixture of glycols, a mixture of alcohols or any combination of these materials.

The indicator is an easily constructed device, developed by R. B. Rudy and J. I. Hoffman of the Bureau staff, in which a sample of the solution in the radiator is chilled to determine its actual freezing point. The test shows the lowest temperature at which the solution will continue to flow through passages of the size used in radiators.

Heart of the device is a brass cylinder having a passage the size of those in a radiator through which a sample of the solution flows from a vertical glass tube at one end. The cylinder is in a copper box which is filled with dry ice, solid carbon dioxide.

When flow stops because of freezing, the cylinder is removed and allowed to warm slowly. Thawing is indicated by the first drop of the solution from the cylinder. It is the second drop to fall, however, that indicates that a flowing temperature has been reached and gives the lowest temperature at which the solution will flow in the automobile radiator. A special type of thermometer is used to show the temperature of the solution within the cylinder.

Science News Letter, December 22, 1951

MEDICINE

Eczema Itching Relieved

➤ PATIENTS WHO for years have been tormented by itching, ugly eczema can be relieved of the itching, sometimes within a matter of hours, by ACTH and cortisone, the hormones that relieve arthritis. A few days later the eruption itself subsides partially or completely.

The good results of these hormones in eczema were reported by Dr. Robert R. Kierland of the University of Minnesota Graduate School and the Mayo Clinic at the meeting of the American Academy of Dermatology and Syphilology in Chicago.

But, Dr. Kierland warned, "these hormones do not cure eczema." If the cause is not dealt with, the eruption comes back within a few days or weeks after the hormone is stopped. Sometimes the eruption is worse than it was before treatment. He also warned that if the hormones are continued for a long period of time, the patients become dependent upon and even "addicted" to the hormones.

In cases of acute hives, ACTH and cortisone make the hives disappear completely or almost completely. If the condition was an allergic reaction that would clear up by itself in time, such as the hives some people get from strawberries or shell fish, the eruption will not come back when the hormone is stopped. The hormones also produce marked benefit in chronic urticaria, or hives, and are especially helpful in controlling itching reactions to drugs and antibiotics including serum sickness.

Science News Letter, December 22, 1951

HYGIENE

Health Rules for Holidays

➤ BEFORE YOU get into the last minute rush of the holiday season, give some thought to safeguarding health and life during this busy but often dangerous period.

One of the big dangers is that of traffic accidents. Bad weather, slippery roads, added hours of darkness, heavier traffic, bulky, vision-obscuring packages in the arms of pedestrians and holiday spirit fortified with alcoholic spirits are factors that lead to more accidents on streets and highways.

Being extra careful may take a few minutes more time but doing so may well save you days, weeks or months of suffering and illness.

Accidents can happen at home, too, if you use dangerous shortcuts or grow forgetful in your haste. Don't stand on a flimsy carton or a chair to reach a shelf or the top branches of the Christmas tree. Use a sturdy ladder. Remember to turn off the electric iron after that last minute pressing job even if it is late at night. Maybe it would be better to do the job the next morning when you are not too tired to remember.

Remember that you need regular rest and regular nourishing meals as much now as at any other season. Do not skimp on either. Nibbling on holiday goodies may keep you from feeling hungry, but the goodies seldom replace the nourishment, in the way of protein, vitamins and minerals, that regular meals supply.

If you get overtired, you may be an easier prey to disease germs. Crowds in shops, buses and street cars increase the number of germs floating in the air you breathe when you get in these crowded places and thus increase your chances of picking up such germs. Regular, nourishing meals and enough sleep every night will help you fight off these germs.

Don't try to keep going with a bad cold. Pneumonia is not the disease it used to be but it is still a disease to reckon with and many a so-called bad cold is really the beginning of pneumonia.

Science News Letter, December 22, 1951

● RADIO

Saturday, Dec. 29, 1951, 3:15-3:30 p.m. EST

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Watson Davis will present highlights of the meeting of The American Association for the Advancement of Science being held in Philadelphia.

MEDICINE

Glowing Skin Helps Fight Allergy Disease

➤ SKIN THAT glows under ultraviolet light is giving doctors new knowledge for fighting allergies and skin diseases.

This new technique for studying blood circulation in the skin and underlying tissues was reported to the American Academy of Dermatology and Syphilology by Dr. Alfred A. Schiller of the University of Illinois College of Medicine in Chicago.

Circulation or the connective tissue elements of the skin, or both, are changed in patients with allergic skin diseases, such as hives, Dr. Schiller has found.

Characteristic changes are found when a medicine, such as ACTH, is given.

For these studies about one drop of a fluorescent dye is injected into the skin of the patient's arm. A photocell ultraviolet light source unit is placed over the injected place and the intensity of the fluorescence is measured at regular intervals until the dye is completely absorbed. This tells the doctor how long it takes for the blood circulation to remove a known amount of the dye. From this he can tell whether the circulation is normal or changed.

The test takes from 15 minutes to one hour and does not give the patient any pain or discomfort.

Science News Letter, December 22, 1951

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N ST., Washington 6, D. C. and ask for Gadget Bulletin 601. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

⚙ *FLEXIBLE STRAW makes drinking easy for a reclining bed patient. It can be curved to a U-shape or to an angle without breaking or closing the tube to the passage of a liquid. It is a throw-away type, which has been treated with wax to prevent disintegration in hot liquids.*

Science News Letter, December 22, 1951

⚙ *EAR PROTECTOR, a recently patented type for use by persons working in deafening noises, is made of a special wax and spans the entrance to the ear canal instead of being inserted into it. When put in position a little pressure secures a seal that will hold it in place indefinitely.*

Science News Letter, December 22, 1951

⚙ *ICE CUBE MAKER, for restaurants and other commercial establishments, produces 5,000 clear cubes in 24 hours. Within its fiber-glass insulated housing a continuous stream of water evenly covers a refrigerated plate to build up a slab of ice which is automatically cut into cubes by electrically heated wires.*

Science News Letter, December 22, 1951

⚙ *KNITTED FABRIC effect is given with a combination of spun nylon and rayon, shot through with a gilt metallic yarn. These dress fabrics are made in a raised diamond pattern that looks like fine hand-crocheting. The nylon lengthens the fabric's life and simplifies its care.*

Science News Letter, December 22, 1951

⚙ *ELECTRIC JEEP, a toy for the youngster, travels forward, backward, right or left by remote control. It is maneuvered with a control box held in the operator's hand and a six-foot electric cord connecting the two, as shown in the photograph. The pint-size jeep will operate on pavements or rugs, and will even climb grades.*

Science News Letter, December 22, 1951

⚙ *WORLD CLOCK, for the office desk, tells not only local time and that in the various time belts in America but also the correct time around the world. It has a conventional clock in an upper corner and a map of the world below with a time-indicating disk that revolves every 24 hours.*

Science News Letter, December 22, 1951

⚙ *CAN INSPECTOR, for use in canning plants, is an X-ray device to spot partly filled cans and leaky ones as the filled containers pass it on a conveyor belt. It sends a tiny beam of X-ray through the cans which is absorbed in varying amounts, depending on the level of the contents.*

Science News Letter, December 22, 1951

⚙ *VINYLITE PLASTIC playing cards are long-wearing and will outlast 100 decks of ordinary paper cards, it is claimed. They are coated with a lacquer made of this resin, are washable, odorless, flame-resistant and resist action of alcohol, water, oils and most chemicals.*

Science News Letter, December 22, 1951

Do You Know?

Bagasse, the now largely wasted crushed *sugar cane* from which the sap has been extracted, can be used to make newsprint paper, relieving in part the demand for wood pulp.

There are about 20 pounds of *copper* in the average automobile radiator.

Gypsum promises to become an important source of *sulfur*.

Most *fruit trees* are pruned during the winter but peach pruning is best done in March.

About 20,000,000 bushels of *potatoes* a year are used for making chips and French fries.

A FEW MEMBERSHIPS ARE NOW AVAILABLE

in *Things* of science for 1952

ONCE A MONTH for a year we will pack a blue package with scientific fun, with mental stimulation, with hours of absorption, with future hobbies, with knowledge; but specifically we will pack the boxes with THINGS of *science*—real objects of science to be handled and looked at and owned. And with them, sheets of suggested experiments and complete explanations of them. There are now more than ten thousand members of the group of friends of science who receive one of these exciting boxes each month. This unusual service comes one year postpaid for $5.00. Use this coupon to send in your gift memberships NOW.

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